

## **2002 DoD Interoperability Conference Industry Views**

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# Interoperability-- A Matter of Viewpoint?

## View A

- Coalition Warfare
- Joint Force
- Platform Supplier
- Prime Integrating Contractor
- System Supplier
- Subsystem Supplier



## View B

- Single National Force
- Independent Service
- Mission System Supplier
- Subsystem Integrator
- Subsystem Supplier
- Component Supplier



# BAE SYSTEMS

# Where We Stand

BAE SYSTEMS



UK plc



North  
America  
Group



# Sensor Systems Capabilities

Electronic Warfare and Counter measures  
IR Detection and Countermeasures  
Defensive Aids Suites  
Radar Warning Receivers

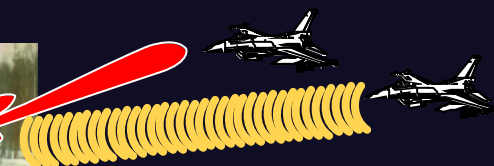
**BAE SYSTEMS**

*Electronic  
Protection*



*Electronic  
Attack*

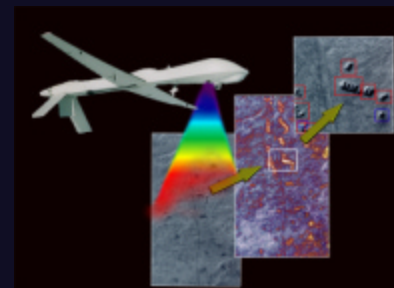
High Powered Support Jamming  
Advanced Stand-off Jamming



Multi-spectral Reconnaissance Sensors  
Electro-Optical Imaging Sensors



Combat ID - IFF  
Blue Force Locator RF Tags



Chem / Bio Sensors

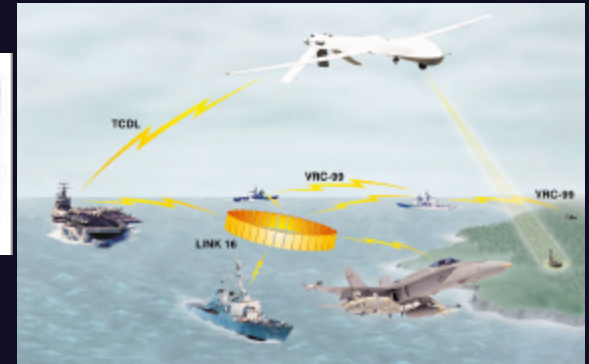




# Information Systems Capabilities

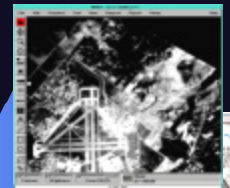
**BAE SYSTEMS**

**Comms and Data Links  
C4ISR Sensor to Shooter Systems**



**Information Warfare**

**Precision Imagery & Geospatial Systems  
Information TPED  
Mission Planning  
Targeting Systems**



***Precision  
Targeting  
Workstation***



***Digital  
Imaging  
Workstation***



# Integrated Solutions Capabilities

**BAE SYSTEMS**

*Information Superiority*

**Information Dominance Systems**

**Signal and Communications Intercept**

**Airborne Reconnaissance Systems**

***ATARS Sensor Suite***

**Intelligent Sensor Networks**



# JSF- Eurofighter Interoperability

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# JSF - Eurofighter Interoperability Challenges

- **Coalition Force Weapon System CONOPS (JSF/EF differences)**
  - Speed
  - Payload/Range (depends on JSF/EF variant)
  - Stealth
- **Systems & equipment**
  - Sensors (performance differences, offboard sensing)
  - Data Fusion (data latencies, different JSF/EF fusion algorithms)
  - Communications (systems & protocols, high speed/capacity links)
  - Electronic Warfare (performance, security, threat libraries)
  - Weapons (common types, cost of US/UK weapon clearances)
- **Support Infrastructure**
  - Ground equipment
  - Consumables (fuel, oil, coolants, chaff/flare, ammunition)
  - Mission planning (threat aware auto-planning, JSF/EF planning tie-ups)
  - Training & rehearsal



# Joint Chemical Agent Detector (JCAD)



# JCAD Interoperability Challenges

- **Multi-Service Development Program A Success**
  - **USAF Lead Service**
  - **Other Services Treated as “Valued Customers”**
- **Multiple Service Independent versus Joint Test Program**
  - **Multiple Deployment Environments**
    - **Soldiers, HMMWV, Bradley**
    - **CH-130s, CH-53s, Comanche**
    - **Frigates, Destroyers**
  - **Multiple Qualification and Operational Testing**
- **Joint Warning & Reporting Network (JWARN) Only a Concept**
  - **C3I System for NBC Warning**
  - **Radio Protocols Exist**
  - **Data Assimilation, Correlation and Fusion Approaches TBD**

# Link 16 Network Interoperability

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# Link 16 Interoperability Challenges

- **Link 16 is more than a Data Link**
  - **Communication System**
  - **Navigation System**
  - **Identification System**
- **Focus on Interoperability Symptoms versus Root Causes**
  - **Data, sensor, and navigation registration needed**
  - **Proper system integration achieves interoperability**
- **Platform Centric or Network Centric Integration**
  - **We still think of integrating Link 16 into a platform rather than integrating a platform into Link 16**



# Conclusions

- Viewpoint **Makes** a Difference
- Interoperability Is a Complex System-of-Systems Engineering Challenge
  - Information Exchange Requirements (IERs) Alone Not Sufficient
  - Interoperability Can't Be a Secondary Performance Parameter
- Interoperability Can't Be an Unfunded Mandate
  - An Interoperability View of the PPBS Is Integral to Success.
- We Need a Process That
  - Bridges the Viewpoints
  - Coordinates the Total System of Systems Requirements Operationally, Functionally, & Financially